

Appl. No. 10/753,834
Docket No. 14XZ125897 / GEM-0114

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method for adjusting the emission rate of radiation of a source of X-ray radiation comprising:

calibrating the radiation emission rate of the source ~~is calibrated~~ as a function of a voltage applied between first and second emitting elements of the source and as a function of the heating current of the active source in response to the source being active;

supplying the second element ~~is supplied~~ with high voltage relative to the first element;

adjusting a heating current of the second element ~~is adjusted~~ for an expected rate of radiation emission as a function of the calibration; and

carrying out the calibration ~~is carried out~~ by an expression chosen to express the emission rate of radiation in which the logarithm of the value of the emission rate is a second-order polynomial function of the heating current and a first-order polynomial function of the voltage.

2. (original) The method according to claim 1 wherein:

the source of radiation is an X-ray tube;

the first element is an anode of the tube; and

the second element is a cathode of the tube.

3. (currently amended) The method according to claim 2 wherein the calibrating is ~~tube is calibrated~~ as a function of six coefficients a, b, c, d, e, and f that, for a given tube, satisfy the equation:

$$\ln(I_{\text{tube}}) = a I_{\text{ch}}^2 \ln(V) + b I_{\text{ch}}^2 + c I_{\text{ch}} \ln(V) + d I_{\text{ch}} + e \ln(V) + f,$$

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where \ln is a Neperian logarithm; I_{tube} is tube current; I_{ch} is tube heating current; and V is tube voltage.

4. (currently amended) The method according to claim ~~[[2]]~~ 3 wherein:
the tube has a wide focus, a narrow focus, or both; and
the coefficients a , b , c , d , e and f have values given by one of the columns of the following table, or values given by both columns of the following table for a dual-focus tube:

coefficients\cathode	wide focus	narrow focus
a	2.948793	4.517432
b	-7.42477	-11.1148
c	-8.01109	-10.6986
d	29.87146	37.45432
e	5.616099	6.544223
f	-23.3185	-25.8013

5. (currently amended) The method according to claim 2 further comprising:
correcting the calibration of a particular the tube is corrected as a function of the nature of ~~this particular~~ the tube by;

~~in making readings for this particular tube, during several calibration experiments, of measurements of the tube current, the heating current, and the applied high voltage;~~
and

~~in carrying out a regression type analysis to determine coefficients α and β with which a heating current I_{chreal} to be applied to the tube is expressed in the form: $I_{\text{chreal}} = \alpha I_{\text{chcalib}} + \beta$, the form in which where I_{chcalib} is the value of the heating current such as~~
~~is that~~ results from the calibration.

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6. (currently amended) The method according to claim 3 further comprising:
correcting the calibration of a particular the tube is corrected as a function of the nature of ~~this particular~~ the tube by;
~~in making readings for this particular tube, during several calibration experiments, of measurements of the tube current, the heating current, and the applied high voltage;~~
and
~~in~~ carrying out a regression type analysis to determine coefficients α and β with which a heating current I_{ch} real to be applied to the tube is expressed in the form: $I_{ch} \text{ real} = \alpha I_{ch} \text{ calib} + \beta$, ~~the form in which where~~ $I_{ch} \text{ calib}$ is the value of the heating current such as ~~is that~~ results from the calibration.

7. (currently amended) The method according to claim 4 further comprising:
correcting the calibration of a particular the tube is corrected as a function of the nature of ~~this particular~~ the tube by;
~~in making readings for this particular tube, during several calibration experiments, of measurements of the tube current, the heating current, and the applied high voltage;~~
and
~~in~~ carrying out a regression type analysis to determine coefficients α and β with which a heating current I_{ch} real to be applied to the tube is expressed in the form: $I_{ch} \text{ real} = \alpha I_{ch} \text{ calib} + \beta$, ~~the form in which where~~ $I_{ch} \text{ calib}$ is the value of the heating current such as ~~is that~~ results from the calibration.

8. (currently amended) The method according to claim 2 further comprising:
correcting the calibration of a particular the tube is corrected as a function of the aging of ~~this particular~~ the tube by;
~~in making readings for this particular the tube, during subsequent uses, of measurements of the tube current I_{tubc} , the heating current I_{ch} , and the applied high voltage V; and~~

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~~in~~ carrying out a mathematical regression to determine coefficients α and β with which the heating current I_{ch} real to be applied to the tube is expressed in the form: $I_{ch}^{real} = \alpha I_{ch}^{calib} + \beta$, ~~the form in which~~ where I_{ch}^{calib} is the value of the heating current such ~~as it that~~ results from the calibration.

9. (currently amended) The method according to claim 3 further comprising: correcting the calibration of a particular ~~the tube is corrected~~ as a function of the aging of ~~this particular~~ the tube by;

~~in~~ making readings for ~~this particular~~ the tube, during subsequent uses, of measurements of the tube current I_{tube} , the heating current I_{ch} , and the applied high voltage V; and

~~in~~ carrying out a mathematical regression to determine coefficients α and β with which the heating current I_{ch} real to be applied to the tube is expressed in the form: $I_{ch}^{real} = \alpha I_{ch}^{calib} + \beta$, ~~the form in which~~ where I_{ch}^{calib} is the value of the heating current such ~~as it that~~ results from the calibration.

10. (currently amended) The method according to claim 4 further comprising: correcting the calibration of a particular ~~the tube is corrected~~ as a function of the aging of ~~this particular~~ the tube by;

~~in~~ making readings for ~~this particular~~ the tube, during subsequent uses, of measurements of the tube current I_{tube} , the heating current I_{ch} , and the applied high voltage V; and

~~in~~ carrying out a mathematical regression to determine coefficients α and β with which the heating current I_{ch} real to be applied to the tube is expressed in the form: $I_{ch}^{real} = \alpha I_{ch}^{calib} + \beta$, ~~the form in which~~ where I_{ch}^{calib} is the value of the heating current such ~~as it that~~ results from the calibration.

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11. (currently amended) The method according to claim 5 further comprising: correcting the calibration of a particular the tube is corrected as a function of the aging of this particular the tube by;

in making readings for this particular the tube, during subsequent uses, of measurements of the tube current I_{tube} , the heating current I_{ch} , and the applied high voltage V ; and

in carrying out a mathematical regression to determine coefficients α and β with which the heating current I_{ch} real to be applied to the tube is expressed in the form: $I_{ch}real = \alpha \cdot I_{ch}calib + \beta$, the form in which where $I_{ch}calib$ is the value of the heating current such as it that results from the calibration.

12. (currently amended) A computer program product having therein a program code comprising means for:

the calibrating a radiation emission rate of the an X-ray source is calibrated as a function of a voltage applied between first and second emitting elements of the source and as a function of the a heating current of the active source in response to the source being active;

supplying the second element is supplied with high voltage relative to the first element;

adjusting a heating current of the second element is adjusted for an expected rate of radiation emission as a function of the calibration; and

carrying out the calibration is carried out by an expression chosen to express the emission rate of radiation in which the logarithm of the value of the emission rate is a second-order polynomial function of the heating current and a first-order polynomial function of the voltage.

13. (currently amended) A data carrier comprising a medium having embedded therein a computer program code comprising means for:

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~~the calibrating a~~ radiation emission rate of ~~the an X-ray source is calibrated~~ as a function of a voltage applied between first and second emitting elements of the source and as a function of ~~the a~~ heating current of the active source in response to the source being active;

supplying the second element ~~is supplied~~ with high voltage relative to the first element;

adjusting a heating current of the second element ~~is adjusted~~ for an expected rate of radiation emission as a function of the calibration; and

carrying out the calibration ~~is carried out~~ by an expression chosen to express the emission rate of radiation in which the logarithm of the value of the emission rate is a second-order polynomial function of the heating current and a first-order polynomial function of the voltage.